Claims

1. A biocompatible polymer composition, suitable for *in vivo* vessel repair, comprising a matrix pre-polymer, a filler and a curing agent, wherein said composition has a viscosity of 2 000 to 12 000 cSt at 25 °C and wherein said biocompatible polymer composition is curable in the presence of a curing catalyst at 37 °C to form a cured material with an elongation until rupture of at least 5 % and an elastic modulus of at least 1 MPa.

2. Composition according to claim 1, wherein the viscosity of the biocompatible polymer composition is in the range of 3 000 to 10 000 cSt, preferably of 4 000 to 8 000 cSt.

3. Composition according to claim 1 or 2, wherein said biocompatible polymer composition is curable in the presence of a curing catalyst at 37 °C to form a cured material with an elongation until rupture of at least 10 %, preferably at least 25 %.

4. Composition according to any of the preceding claims, wherein the matrix pre-polymer is a silicon (pre-)polymer, preferably a polydialkylsiloxane (pre-)polymer comprising at least two vinyl groups more preferably, more preferably polydialkylsiloxane (pre-)polymer comprising three to five vinyl groups.

5. Composition according to any of the preceding claims, wherein the filler is a hydrophobic filler.

6. Composition according claim 5, wherein the hydrophobic filler is modified with an organosilicon compound, preferably with a vinylalkylsiloxane.

7. Composition according to any of the preceding claims, wherein the biocompatible polymer composition comprises a curing-inhibitor.

8. Composition according to any of the preceding claims, wherein the concentration of the matrix pre-polymer is 10 to 85 wt. % based on the total weight of the composition, preferably 50-70 wt. %.

9. Composition according to any of the preceding claims, wherein the curing agent is present in an amount of at least 0.1 wt. % based on the total weight of the composition.

10. Composition according to any of the preceding claims, wherein the curing agent is a polyalkylhydrosiloxane polymer, preferably a polyalkylhydrosiloxane copolymer comprising alkylhydrosiloxane moieties and dialkylsiloxane moieties, more preferably comprising methylhydrosiloxane moieties and dimethylsiloxane moieties.

11. Composition according to any of the preceding claims, wherein the curing agent is present in an amount providing a number of functional groups in the range of 1-10 times the number of functional groups that is provided by the matrix pre-polymer.

12. Composition according to any of the preceding claims, wherein the filler is present in an amount of 1-50 wt. %, preferably 2-45 wt. %, more preferably 15-40 wt. %, based on the total weight of the composition.

13. Composition according to any of the preceding claims, wherein the composition comprises at least one filler selected from the group consisting of silica nanofillers, molecular silica, clay nanofillers, mica nanofillers, polymeric microfibres and glass microfibres.

14. Composition according to any of the preceding claims, comprising a chain extender.

15. Composition according to any of the preceding claims, wherein the number average particle size of the filler is chosen in the range of 10 to 50 000 nm, preferably 10 to 1 000 nm, more preferably 10 to 500 nm.

16. Kit of parts suitable for use in an *in vivo* vessel repair, comprising a biocompatible polymer composition according to any of the claims 1-15, and a curing-catalyst composition.

17. Kit according to claim 16, wherein the curing catalyst composition comprises at least one component selected from the group consisting of matrix pre-polymers, fillers and contrast agents.

18. Kit according to claim 16 or 17, wherein the viscosity of the curing catalyst composition is at most 1 500 cSt higher or lower than the viscosity of the biocompatible polymer composition.

19. Kit according to any of the claims 16-18, wherein the biocompatible polymer composition mixed with the curing catalyst composition, has a curing time of 5 min or less, preferably of less than 3 min.

20. Use of a composition according to any of the claims 1-15, in the manufacture of a physiologically acceptable composition for the *in vivo* repair of an aneurysm, preferably an aortic aneurism.

21. Use of a composition according to any of the claims 1-15, in the manufacture of a physiologically acceptable composition for prophylactic treatment of a bone, preferably a hip or a collarbone.

22. Use of a composition according to any of the claims 1-15, in the manufacture of a physiologically acceptable composition for securing a stent or stent-graft in an artery.

23. Cured material, obtainable by curing a composition according to any of the claims 1-15.